VIA ELECTRONIC MAIL: phann@waterboards.ca.gov

June 6, 2008

Mr. Paul Hann
Environmental Scientist
Central Valley Water Quality Control Board (CVWQCB)
11020 Sun Center Drive
Rancho Cordova, CA 95670-6114

RE: WPHA Comments on the Methodology for Relative-Risk Evaluation for Pesticides Used in the CV Pesticide Basin Plan Amendment.

Dear Mr. Hann:

On behalf of the Western Plant Health Association (WPHA), I am providing you this letter that addresses the CVWQCB's Draft Document entitled Relative-Risk Evaluation for Pesticides Used in the Central Valley Pesticide Basin Plan Amendment Project Area issued April 2008. WPHA represents the interests of fertilizer and crop protection manufacturers, distributors, formulators and retailers in California, Arizona, and Hawaii, and our members comprise more than 90 percent of all the companies marketing crop protection products in these states. WPHA welcomes the opportunity to comment on this public review draft document.

As WPHA understands, the purported goal of this relative-risk evaluation report for pesticides is to provide a screening level evaluation methodology for identifying and prioritizing a target list of current-use pesticides to help the CVWQCB determine priorities for further pesticide evaluation and development of water quality objectives. Regarding the goal of conducting further pesticide evaluation, WPHA does NOT believe that the ranking process is necessary since the pesticides are all registered under FIFRA and have already been evaluated by simple and, where necessary, more sophisticated ecological and environmental risk assessment processes (and also for their human risk potential). Priorities for development of water quality objectives should be set by determining whether specific products are actually resulting in impairment of biological integrity by evaluation of multiple lines of evidence collected from specific water bodies. Instead, it appears that the CVWQCB's relative-risk evaluation is restricted to designing monitoring programs that generate data necessary to complete the lines of evidence useful for making impairment decisions. Accordingly, it would seem that the appropriate descriptive title of the report is probably best characterized as "priority scheme" rather than "relative-risk evaluation."

Below are 3 initial and general summary recommendations from WPHA. A detailed treatment of each area follows within this document:

1. The process needs to be transparent. All data used should be reported and the classification process should be clear.
2. Objective criteria and methods should be used to rank the "relative-risk." Instead, the CVWQCB scheme described in the report appears to rely heavily on personal opinion and professional judgment.

3. Any relative-risk ranking or more correctly in this case, prioritization for future consideration, should be based on a standard and consistently selected data set. These data and selection criteria exist for pesticides but were not utilized in the CVWQCB process.

WPHA recognizes that the process described in this report provides some useful guidance on how to prioritize pesticides to include in monitoring programs in the Central Valley Region. However, WPHA contends that CVWQCB's staff authors did NOT properly provide sufficient scientific references to support their methodology.

WPHA would request that CVWQCB's staff authors clearly define what ranking and scoring system approach they have used and their respective justification for its use.

WPHA would suggest that that you include a summary list of the pesticides with high and moderate risk rankings in the executive summary.

Please answer, were the monitoring data properly tested to conform with the quality assurance and quality control (QA/QC) procedures? WPHA recommends that all sources of monitoring data should be clearly identified with the associated QA/QC procedures. How were non-detection pesticide values addressed, particularly in cases where difference sources of data have different levels of detection for specific pesticides?

WPHA is concerned that the PUR was from reported usage from 1993-2004. WPHA requests that CVWQCB's staff authors provide some insight on just how representative these older data sets are for post-2007 pesticide uses. Do they represent current exposure patterns for the pesticides of interest?

WPHA is concerned that the influential benchmark for the toxicity data is based on the lowest aquatic life value for each pesticide. All of these low values, which are key drivers in this entire process, should be very carefully evaluated by reviewing the original document reporting these values. A glaring example to support this verification process was your lowest toxicity value reported for diazinon (0.2 ug/L for *Gammarus fasciatus*). This is incorrect. The value should be 2.0 ug/L due to a unit conversion issue with the data from the original 1966 study. For more information, WPHA recommends that CVWQCB's staff authors review a paper by Hall and Anderson (2005) entitled "Acute Toxicity of Diazinon to the Amphipod, Gammarus pseudolimnaeus: Implications for Water Quality Criteria Development".

WPHA stresses that it is entirely insufficient to rely on the summary information in a database, although more confidence can be placed in those assembled by scientific regulatory agencies such as the USEPA. In addition, there are numerous factual corrections that will need to be made to the CVWQCB pesticide database as reflected in the tables within the draft report. Consequently, each impacted registrant plans to submit to the CVWQCB their respective and identified compound's **correct data** for the following emphasized criteria elements (as applicable):

1. Toxicity value
2. Water solubility value
3. K_{oc} value
4. CAS number

In view of this critical data, the correct numeric values will require the CVWQCB to re-evaluate/re-rank these impacted compounds according to the priority gradient scheme developed in Table 1.

Since the CVWQCB staff authors have chosen to cite the PAN 2005 database, WPHA would recommend that as a government regulatory entity it would have been more credible and appropriate to first thoroughly and critically examine potentially prejudiced sources of information before its use.

WPHA would recommend that CVWQCB consider using a species sensitivity distribution (SSD) approach with the receptor species for each pesticide (i.e., plants for herbicides) and using a 5^{th} or 10^{th} centile as the toxicity value for the ranking analysis. Using a centile developed from a SSD of toxicity values is much more credible that simply using the lowest toxicity value.

WPHA would suggest that for the 3-step process your staff authors consider clearly stating here (that a hazard quotient (HQ) approach (maximum environmental concentration/lowest toxicity value) is being used for risk ranking. WPHA would suggest including the HQ for each pesticide in Table 2A.

To elaborate on this point, the methodology that CVWQCB's staff authors use determines risk in a 2-step ranking and scoring process. First, the likelihood of exposure is assessed and secondly, the toxicity is assessed. In reality, if a true risk evaluation is intended the process should NOT be separated into 2 steps. Rather, a comparison of likely water concentrations should be compared to a relevant ecological endpoint. WPHA emphasizes that the amount of usage determines the magnitude of the concentration. Then this concentration should be compared against the toxic endpoint. WPHA suggests that the CVWQCB review the 2005 work done by the US Geological Service (USGS) on Watershed Regressions for Pesticides (WARP) by Crawford CG, Larson SJ, and Gilliom RL entitled, "Development and Application of for Estimating Pesticide Concentration Distributions in Streams." The USGS draft report indicates that that about 50% of the variability in surface water concentrations can be attributed to use intensity. Please note: WARP was developed for rain-fed agriculture and may be most relevant to California winter conditions. CVWQCB should consider using a tool such as WARP to estimate a 95^{th} percentile concentration which could be compared against an acute endpoint. Alternatively, a lower percentile such as the annual mean concentration could be used to compare against a chronic endpoint. Given the 2-step process, evaluating the compounds highest on a per pound basis as well as highest on a per acre basis is needed. However, the most straightforward and scientifically defensible procedure would be to calculate potential concentrations of all commonly used compounds and compare them to the relevant ecological endpoint.

Please describe the rationale that was used for selecting the top 30 pesticides based on application and/or total areas applied. How did CVWQCB's staff authors evaluate the distribution of application data and decide on 30 as a cut-off point?

The sediment risk evaluation that CVWQCB's staff authors had used was highly unrefined and only included 3 risk ranking gradients of potential, possible and unlikely. This is based on the presence and degree (K_{oc} values) of pesticides in sediment and does include a relationship to toxicity. WPHA must stress that the measured concentration of a pesticide in sediment is NOT equivalent to an adverse ecological effect.

WPHA is quite troubled that tralomethrin and PHMB were included as high risk pesticides based on the professional judgment by one individual. This sort of subjective interjection can only serve to cast doubt and undermine the scientific credibility of CVWQCB's report. In addition, this action fails to comply with the standardized format used for ranking the other pesticides. It would be more appropriate to add these 2 pesticides to a "Watch List" at this point in time until more data are available for a proper risk ranking.

WPHA recommends that draft report's discussion of joint toxicity should be clearly balanced and state that there are 3 basic types of mixture interactions:

1. Antagonism: the toxicity of a mixture of chemicals is less than a simple summation of individual toxicities of individual chemicals;
2. Additive: the toxicity of a mixture of chemicals is approximately equal to that expected from a simple summation of toxicities of individual chemicals; and
3. Synergism: the toxicity of the mixture is greater than expected from a simple summation of toxicities of individual chemicals.

In addition, WPHA recommends that the HQ concept (maximum environmental concentration/lowest toxicity value) should be included in this flow chart to provide "real world context" for the toxicity data. For instance, a very low pesticide LC_{50} value of 50ng/L would be irrelevant if the environmental concentration never exceeds 10ng/L.

Insofar as the environmental exposure aspect to your draft report, WPHA has the following comments for CVWQCB's consideration.

The CVWQCB staff authors of the report did NOT state how a "value" was selected when multiple data points exist for a chemical property. Are the data: maxima, minima, arithmetic means, or another indicative value? Formal rules are necessary to deal with this situation, since the rankings can vary depending on the data selection process.

CVWQQB's draft report description concerning the role of water solubility required clarification. As stated later, the K_{oc} value helps determine whether the residues are present in the sediment or runoff phase of water. K_{oc}, not water solubility is the principle property regarding runoff, so the statement, *"The higher the water solubility of a given pesticide, the higher is its risk to dissolve into irrigation or precipitation water and to move from the application site into a surface waterbody"* is inaccurate. The important parameter in mechanistic runoff models is K_{oc} and water solubility is not even an input variable unless volatilization is being considered. Water solubility is not usually relevant to maximum of concentration levels due to dissolved sediments and other impurities. While water solubility is generally correlated to K_{oc} (high solubility implies low K_{oc}), there are some notable exceptions where this relationship is inapplicable.

The decision to focus on compounds applied during the winter months seems reasonable since runoff will occur primarily during this time. However, has the CVWQCB staff authors considered that untreated discharge of irrigation drainage water can also result in residues for applications made in the spring and summer?

WPHA believes that the comparison of eco-toxicity endpoints with maximum concentrations seems overly simplistic. A single concentration could be the result of an unusual circumstance or even a false positive. A larger portion of the concentration distribution should be considered in the comparison of concentrations obtained in monitoring data and eco-toxicity endpoints. In addition, the location of the sample should be considered. For example, residues in a river would be of more concern than residues in a sample taken from an irrigation furrow in the middle of a treated field.

WPHA is quite troubled that CVWQCB's staff authors have chosen to disregard the importance of environmental persistence and human management. Without these critical factors, the results will have significant distortions in the selection of pesticides. As mentioned earlier, human practices such as discharge of irrigation drainage water can significantly impact residues in surface water. Persistence in soil or water should also be considered. However, the effect of persistence may vary greatly depending on the specific situation. For a compound applied in late spring (in the absence of drainage water) minimal discharge will occur if the compound has degraded in the soil prior to the next large rainfall in the autumn. Because the time for a compound present in the water phase to move through surface water is usually measured in days, little difference would be observed between moderate and more persistent compounds. However, a degradation rate corresponding to a half-life of an hour would dramatically decrease potential adverse effects.

WPHA recognizes that while increasing or decreasing usage is a suitable criterion for assessing priority this does not change the actual concentrations in surface water, which for all of the compounds except for those with extremely high K_{oc}, is dependent on use within a few days to a year - depending on the properties of the specific compound and the specific environmental conditions.

In conclusion, thank you for your consideration of WPHA's comments concerning the methodology used for the draft document on relative-risk evaluation for pesticides that is planned to be used in the CV pesticide basin plan amendment. WPHA appreciates your diligence, and looks forward to reviewing your complete and timely responses to the recommendations and questions of concern raised within this document. WPHA continues to welcome all opportunities to work with CVWQCB on this and other important water quality issues.

Sincerely,

/s/ Nasser Dean

Nasser Dean
Director, Environmental Regulatory Affairs

cc via email: Central Valley Water Quality Control Board, Management
CA Department of Pesticide Regulation, Management
CA Department of Food and Agriculture, Management
CA Almond Board
CA Citrus Mutual
CA Cotton Growers & Ginners Association
CA Farm Bureau Federation
CA Grape and Tree Fruit League
CA Rice Commission
CA Winegrape Growers Association
Western Growers

References

Hall, L. W. Jr. and R. D. Anderson. 2005. Acute toxicity of diazinon to the amphipod, Gammarus pseudolimnaeus: Implications for water quality criteria development. Bull. Environ. Contam. Toxicol. 74: 94-99.

Crawford, C.G.; Larson, S.J. and Gilliom, R.L. 2005. USGS on Watershed Regressions for Pesticides (WARP) by, "Development and Application of for Estimating Pesticide Concentration Distributions in Streams."

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